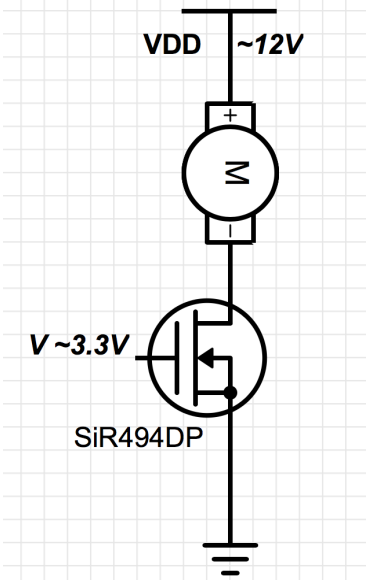
1.Schematics of the Circuit:



Eligibility of current design:
As it is demonstrated in the part of "Improvements of Design", only one MOSFET SiR494DP (http://www.vishay.com/docs/64824/sir494dp.pdf) is needed.
V_{speed}=3.3V is to be designed, as known as the gate voltage is 3.3V when the motor is ON. Otherwise, V_{speed} is supposed to be 0V to shut down the motor.

Gate-Source Threshold Voltage for SiR494DP is max at 2.5V, which is less than 3.3V, so this MOSFET can be functioned as a switch successfully.

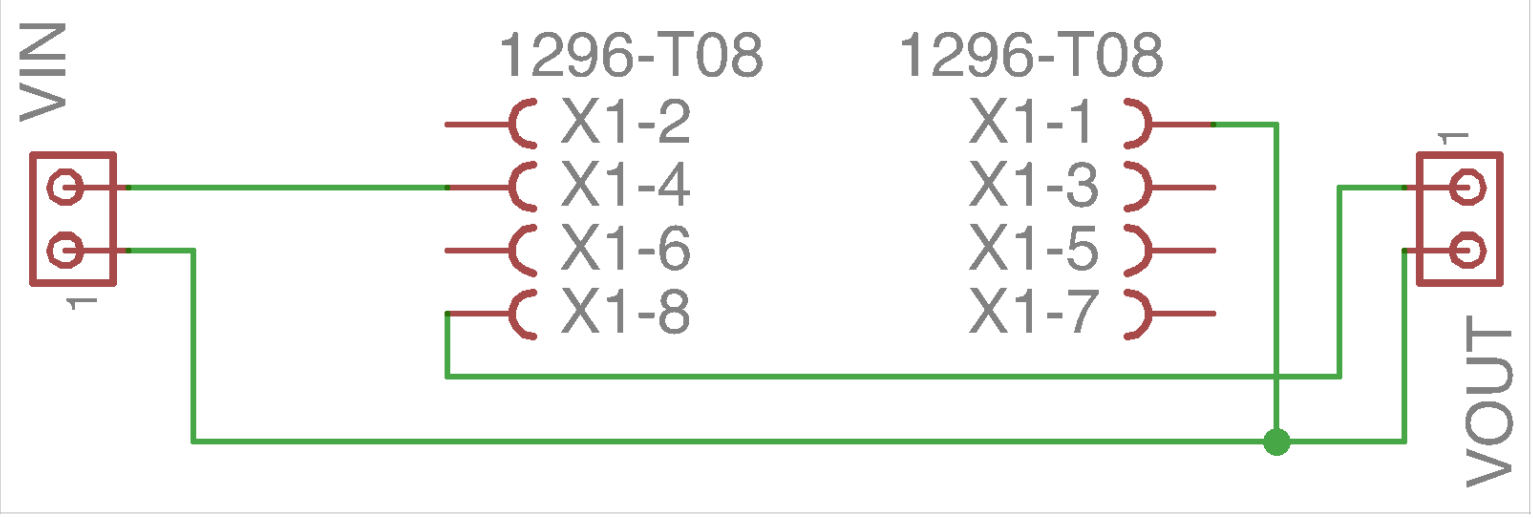
Continuous Source-Drain Diode Current for SiR494DP at 25°C is 60A, which is larger than the maximum possible current of the motor (10A).

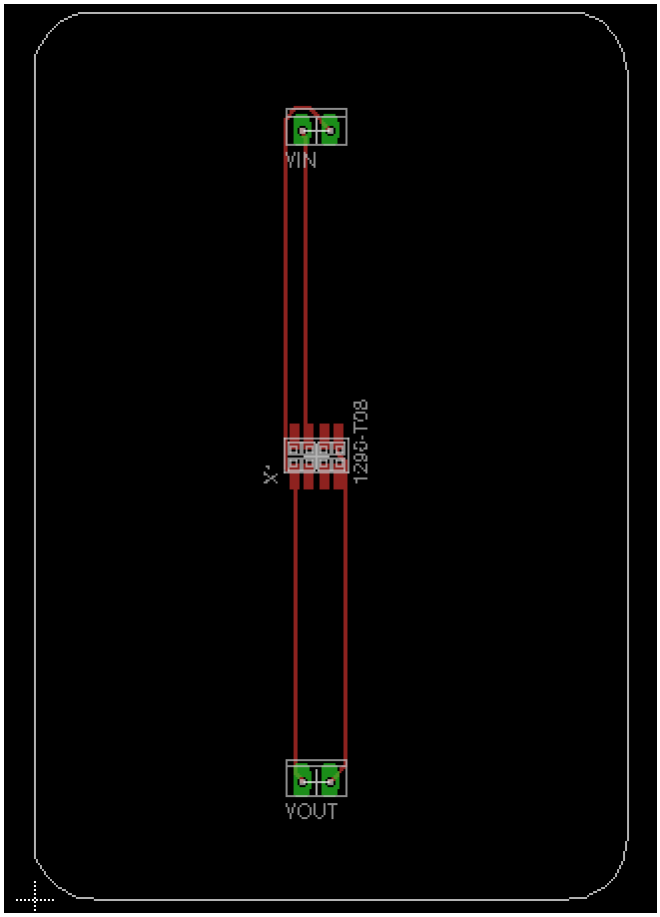
For MOSFET SiR494DP, at V_{GS} = 4.5 V, $R_{DS(on)}$ is 0.0014Ω, the maximum power dissipation of the MOSFET can be estimated as $10A\times(0.0014\Omega)^2=0.0000196W$, where power of the motor can be estimated by 10A×12V=120W. The efficiency requirements is not violated.

2.Placeholder and Eagle Drawings

As SiR494DP is not a commonly-used package and it is not shown in Eagle package, a similar size MOSFET will be selected in the PCB design as a placeholder.
(I have confirmed with Prof and he said a placeholder is fine for this assignment)

SiR494DP is a 5.15 mm × 6.15 mm 8-pin PowerPAK SO-8 integrated circuit. Single Row Female Socket 1296-T08 with a very similar outline will be used as the placeholder, As its port 4 denotes the gate of MOSFET, port 8 and port 1 denotes drain and source respectively.





Note that the socket represents a placeholder for the actual IC component.